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1300
Ser CB30/ 061
JAN 23 1992

From: Commander, Naval Construction Battalions, U.S. Pacific Fleet
To: Chief of Naval Operations (OP-44)
Subj: NAVAL CONSTRUCTION FORCE SUPPORT OF OPERATION DESERT SHIELD/STORM
Ref: (a) CNO ltr 1300 Ser 44R/1U597846 of 17 Jun 91
(b) COMCBPAC ltr 1300 Ser CB30/889 of 08 Nov 91
Encl: (1) Naval Construction Force Operation Desert Shield/Storm After Action Report

1. Enclosure (1) is forwarded in accordance with reference (a) and is the final report on this operation superseding the interim report forwarded by reference (b). The lessons learned represent the major items identified by Naval Construction Force units assigned to the FIRST Marine Expeditionary Force. There were numerous other minor items which the respective Fleets and NAVFACENGCOM have taken for action that are not included in this report.

2. Many of the recommended solutions propose adding equipment, tools, parts, capabilities and training for battalion personnel. While each individual item appears to be a minor increase, the comprehensive additions will increase weight and cube to the Table of Allowance and necessitate additional school/training requirements particularly on the already heavily tasked Officer and Chief Petty Officer communities. As the complexity and speed of modern warfare increases, the military requirements to assure the ability of Seabees to defend themselves, exercise command and control, be self sufficient and simultaneously complete their construction mission in such an environment demands continuous, thoughtful evaluation and analysis when compared to current ROCs and POEs. In other words, Naval Mobile Construction Battalions may have reached the saturation point on expectations versus capabilities.

Subj: NAVAL CONSTRUCTION FORCE SUPPORT OF OPERATION DESERT
SHIELD/STORM

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OPERATION DESERT SHIELD/OPERATION DESERT STORM
EXECUTIVE SUMMARY

Operations Desert Shield and Desert Storm comprised the largest single deployment and employment of Seabees since the Vietnam Conflict. This report provides an overview of the movement of Naval Construction Force Units (NCF) for Operations Desert Shield/Desert Storm; the completion of projects for Commander, U.S. Marine Forces Central Command/Commander FIRST Marine Expeditionary Force (COMUSMARCENT/I MEF) in Southwest Asia (SWA); and major lessons learned from the participating NCF units which operated under the Operational Control of COMUSMARCENT/I MEF.

On 2 August 1990, the Emirate of Kuwait was invaded by the nation of Iraq. To deter further expansion of aggression by Iraq specifically against the Kingdom of Saudi Arabia, the United States deployed military forces to Southwest Asia. The assignment of I MEF resulted in a request for the NCF to support Marine operations. Eventually, four Naval Mobile Construction Battalions (NMCB), the major portions of a fifth NMCB, a Naval Construction Regiment (NCR) Command Element, an Underwater Construction Team (UCT) Air Detachment and a detail from a Naval Construction Force Support Unit (NCFSU) moved to the region and were assigned to support I MEF.

Commander, Naval Construction Battalions, U.S. Pacific Fleet was notified on C Day (7 August) that Seabees would be required for Operation Desert Shield. Preparations began immediately to deploy four NMCBs and an NCR. Since there are no active operational construction regiments, a composite unit was formed from the staffs of COMCBPAC, COMCBLANT and the 31ST NCR. NMCBs in Guam (NMCB FORTY), Okinawa (NMCB SEVEN), Roosevelt Roads (NMCB FOUR) and Port Hueneme, CA (NMCB FIVE) were tasked to the operation. To provide the best possible response, battalions were tasked to move as Air Detachments, Air Echelons and Sea Echelons. However, shortages of strategic air lift would eventually divert the Air Echelons to sea transportation. The arrival of the NCR and the first Air Detachments occurred at C+21 (28 August). Follow-on units arrived at various times until the final unit, NMCB FOUR closed on C+72 (18 October). Three battalions were located in the vicinity of the port and airfield in Al Jubayl, Saudi Arabia and the fourth at Shaikh Isa Air Base in Bahrain. Maintaining the NCF's seven month deployment schedule, two of the battalions, NMCB FOUR and NMCB SEVEN were relieved by recalled reserve NMCB TWENTY FOUR and NMCB SEVENTY FOUR in early December. Regimental command element personnel were replaced by active duty reliefs from COMCBPAC/COMCBLANT and the two homeport regiments and reserves activated from the THIRD NCR in December and January.

Initially, the NCF's primary tasks focused on support to the Marine Air Ground Task Force (MAGTF) Air Combat Element (ACE) which had three Marine Air Groups (MAG) assigned at three airfields. The highest priorities were to expand aircraft parking areas and improve troop bed-down facilities. Work at each site began within hours of the first Seabees' arrival. The second major task was to construct ammunition supply points (ASP) for the massive amounts of ordnance being brought into theater. As the operation progressed, the emphasis shifted toward further improving Marine bed-down areas to better withstand the harsh desert environment. Base camps were constructed for the THIRD Marine Air Wing (MAW), FIRST Marine Division, and later II MEF. Other projects, including construction of hangars, roads and several galleys, were also completed to improve the operational readiness of the MEF.

In December 1990 operations shifted north towards the Kuwait-Saudi border to prepare for the offensive to liberate Kuwait. The battalion in Bahrain (NMCB SEVENTY FOUR) moved to Mishab and detachments from two Jubayl located battalions (NMCBs FIVE and FORTY) relocated to Kibrit. Major work included maintenance of main supply routes (MSR); expansion of airfields and other airfield related facilities; construction of training ranges for new troops and equipment to improve combat readiness; construction of field galleys; and erection of an Enemy Prisoner of War (EPW) camp.

The preparation for offensive operations also dictated the need for additional NCF units in theater. A detail from Reserve NCFSU FOUR was activated and was brought in to assume custody and maintain a fifth battalion Table of Allowance (TOA) which had been pre-positioned in theater in case an additional NMCB was required. A UCT Air Detachment deployed to Jubayl to be ready to repair damage to Kuwaiti port facilities.

The air war began on D Day (17 January 1991). At the start of air hostilities the Marines were granted use of the Arabian-American Oil Company (ARAMCO) airfield at Tanajib. A Seabee detail moved there to expand the parking area, install fueling taxiways, and erect hangars. This work was accomplished concurrently as a rotary MAG moved to Tanajib and began operations. Meanwhile, the change in ground strategy which would eventually lead to the now famous "end run" shifted operations approximately 50 miles further west from Kibrit and 35 miles further north making it necessary to bring additional units forward. Kibrit was later reduced to a minor support base and the NCF presence moved further west to a main camp at Qarrah. A second NCF support camp was also established at Al Khanjar adjacent to the Marine logistics base. Tasking continued to focus on keeping MSRs passable while working on additional requirements to build a new I MEF command post, a rotary MAG airfield and two C-130 capable airstrips in the barren desert. All major work was completed in time for the start of the ground offensive on G Day (24 February).

Plans called for the NCF to support the Marines during their occupation of Kuwait. The initial concept was for the I MEF command element to go to Al Jaber Airfield just inside the southern Kuwaiti border where the Seabees would build the command post. The NCF would also establish one or two camps in the vicinity of Al Jaber to support operations in Kuwait. On G+2 about 75 Seabees accompanied an advance element from the MEF to Al Jaber to build the command post and survey damage to the airfield. On G+3 it was determined that the MEF command post would not move to Kuwait and the NCF detail withdrew.

The rapid end of the war and the decision to withdraw the Marines as quickly as possible after the cease fire was declared precluded the need for further work in Kuwait. In the rear, certain projects such as covered work areas in the port and ASP expansion and the completion of marshalling areas were required to support the Marines' retrograde. At the same time, battalions began to prepare to return to the United States. The first battalion left Saudi Arabia on G+16. The details up north closed up and returned to the Jubayl area. The second battalion departed on G+47, the third on G+60. The battalion in Mishab redeployed to Al Jubayl to support the retrograde. It departed on G+74 leaving a 110 man detail to load the remaining NCF equipment on board ships. This final group departed on G+109 (13 June), closing out the Seabees' participation in Operation Desert Storm.

HISTORICAL SUMMARY

<u>DATE</u>	<u>C DATE</u>	<u>EVENT</u>
<u>AUGUST 1990</u>		
02 AUG		Iraq invades Kuwait
07 AUG	C DAY	Operation Desert Shield begins. NCF tasked to support I MEF. NMCBs FOUR, FIVE, SEVEN AND FORTY advised by phone to prepare to embark to Southwest Asia to support I MEF
08 AUG	C+1	COMCBPAC OPORDER 90-1 transmitted directing embarkation to Southwest Asia
17 AUG	C+10	First COMCBPAC FOXTROT DELTA personnel arrive in Al Jubayl, Saudi Arabia
26 AUG	C+19	COMCBPAC FOXTROT DELTA and NMCB FIVE Air Det flights depart Port Hueneme
28 AUG	C+21	COMCBPAC FOXTROT DELTA and NMCB FIVE Air Det arrive in Al Jubayl
30 AUG	C+23	COMCBPAC FOXTROT DELTA deployment complete
31 AUG	C+24	NMCB FOUR Air Det departs Roosevelt Roads, PR NMCB FOUR Air Det arrives in Al Jubayl NMCB FIVE Air Det begins work on JNAF parking apron expansion and MAG 16 tent camp
<u>SEPTEMBER 1990</u>		
02 SEP	C+26	MV Constellation departs Guam with NMCB FORTY TOA
04 SEP	C+28	NMCB FOUR Air Det begins King Abdul Aziz Naval Base parallel taxiway project and MAG 13 tent camp
05 SEP	C+29	NMCB FIVE Air Det completes movement and begins ASP 2 construction
06 SEP	C+30	MV Greenridge with NMCB FIVE TOA departs Port Hueneme
10 SEP	C+34	First NMCB SEVEN Air Det flight departs Okinawa
11 SEP	C+35	NMCB SEVEN Air Det arrives in Shaikh Isa Air Base, Bahrain
13 SEP	C+37	NMCB SEVEN Air Det begins 3rd MAW strongback camp, Shaikh Isa, Bahrain NMCB FOUR Air Det movement complete Last NMCB SEVEN Air Det flight arrives
14 SEP	C+38	NMCB FORTY Air Det arrives in Al Jubayl
15 SEP	C+39	MV DANAH departs Okinawa with NMCB SEVEN TOA
16 SEP	C+40	NMCB SEVEN Air Det begins ASP and bomb dump work NMCB FORTY Air Det and Advance Party final flight arrives in Al Jubayl
18 SEP	C+42	MV Maresk Constellation with NMCB FORTY TOA arrives at Al Jubayl
21 SEP	C+45	MV KUBBAR departs Roosevelt Roads, PR with NMCB FOUR TOA
SEP	C+48	First NMCB FORTY Main Body flight arrives

26 SEP	C+50	NMCB FIVE Advance Party arrives at Jubayl Naval Air Facility (JNAF)
SEP	C+51	Final NMCB FORTY Main Body flight arrives. First complete battalion in theater
29 SEP	C+54	NMCB FORTY begins ASP 1
30 SEP	C+55	NMCB SEVEN Advance Party arrives in Shaikh Isa

OCTOBER 90

02 OCT	C+56	MV DANAH arrives at Mina Sulman, Bahrain with NMCB SEVEN's TOA
04 OCT	C+58	MAG 16 tent camp at JNAF complete
06 OCT	C+60	NMCB FORTY begins work on I MEF Command Post
07 OCT	C+61	MV GREENRIDGE arrives at Al Jubayl with NMCB FIVE's TOA and first AM-2 matting shipment
		NMCB FIVE starts MAG 16 galley construction
11 OCT	C+65	NMCB SEVEN Main Body arrives Shaikh Isa; Battalion movement complete; Administrative- Support Unit, (ASU) Bahrain detail established
12 OCT	C+66	NMCB Five Main Body arrives JNAF; Battalion movement complete
13 OCT	C+67	NMCB FOUR and MWSS 174 begin to lay AM-2 matting at King Abdul Aziz Naval Base
14 OCT	C+68	NMCB FIVE and MWSS 374 begin to lay AM-2 matting at JNAF
15 OCT	C+69	MV KUBBAR arrives Al Jubayl with NMCB FOUR's TOA
OCT	C+71	NMCB SEVEN begins Shaikh Isa apron expansion
OCT	C+72	NMCB FOUR Main Body arrives Al Jubayl; Battalion movement complete. NCF deployment complete: move 2,400 SEABEES and 1,125 pieces of CESE
21 OCT	C+75	NMCB FOUR starts FIRST FSSG Galley
22 OCT	C+76	NMCB FORTY starts FIRST MARDIV Galley
		NMCB FIVE starts I MEF R&R Center
30 OCT	C+84	I MEF Class IV yard opened; Jointly operated by NCF and USMC engineer units

NOVEMBER 90

05 NOV	C+90	Secretary of the Navy, the Honorable H. Lawrence Garrett III tours NMCB FORTY's FIRST MARDIV galley project at Abu Hadriyah
07 NOV	C+92	Secretary of the Navy, the Honorable H. Lawrence Garrett III toured the Seabee camp and projects in in Shaikh Isa, Bahrain
09 NOV	C+94	RADM Jack E. Buffington, Commander, Naval Construction Battalions, U. S. Pacific Fleet and CUCM James Fuquay, Force Master Chief arrive to review Seabee work in SWA
10 NOV	C+95	Seabees participate in Marine Corps birthday observances
14 NOV	C+99	ASP 2 complete

16 NOV	C+101	RADM Buffington and CUCM Fuquay depart
19 NOV	C+102	NCF units participate in Exercise IMMINENT THUNDER
		FIRST MARDIV galley complete
22 NOV	C+107	Seabees attend Thanksgiving dinner with President and Mrs. Bush
23 NOV	C+108	NMCB FOUR starts Port Access Road in Jubayl
24 NOV	C+109	NMCBs FOUR, FIVE, SEVEN and FORTY start II MEF Bed Down Project near Camp 15 near Jubayl
25 NOV	C+110	NMCB FIVE completes Apron 2 at JNAF
27 NOV	C+112	I MEF moves into new headquarters in Jubayl Industrial Area
30 NOV	C+115	I MEF R&R Center complete at Camp 2 1/2

DECEMBER 90

01 DEC	C+116	Construction begins on THIRD MAW/MACC 38 base camp
		Construction of K-Span hangars for JNAF begins
03 DEC	C+117	Shaikh Isa ASP and bomb dump complete
04 DEC	C+119	NMCB SEVENTY FOUR Advance Party arrives Shaikh Isa; NMCB SEVEN Advance Party departs for homeport
08 DEC	C+123	100 NMCB ONE personnel arrive to augment NMCB FORTY
09 DEC	C+124	NMCB SEVENTY FOUR Main Body arrives in Shaikh Isa
10 DEC	C+125	NMCB SEVEN Main Body departs Saudi Arabia
11 DEC	C+126	NMCB TWENTY FOUR Advance Party arrives in Al Jubayl
		NMCB FOUR Advance Party departs Saudi Arabia
		THIRD NCR personnel arrive
		Another 100 NMCB ONE personnel arrive to augment NMCB FIVE
		EQCM Herman Hart, Master Chief of the Seabees arrives to visit Seabees in SWA
14 DEC	C+129	NMCB SEVENTY FOUR begins move to Mishab
17 DEC	C+132	NMCB TWENTY FOUR Main Body arrives in Saudi Arabia
		NMCB FOUR Main Body departs Saudi Arabia
18 DEC	C+133	NMCB SEVENTY FOUR begins MAG 26 camp in Mishab
19 DEC	C+134	ASP 3 construction begun by NMCB SEVENTY FOUR
		Shaikh Isa parking apron expansion complete
23 DEC	C+138	NMCB FORTY begins FIRST MARDIV Division Support Area work at Manifah Bay
24 DEC	C+139	NMCB TWENTY FOUR begins Fleet Hospital FIFTEEN site preparation in Jubayl Industrial Area
26 DEC	C+141	EQCM Hart departs SWA
28 DEC	C+143	GEN A. M. Gray, Commandant of the Marine Corps, meritoriously promotes three Seabees
29 DEC	C+144	NMCB FORTY begins construction of Mobile Training Team ranges and base camp for SECOND MARDIV
31 DEC	C+146	NMCB FIVE starts construction of Aeromedical Staging Facility at JNAF

JANUARY 91

4 JAN	C+150	II MEF bed down camp complete
06 JAN	C+152	THIRD NCR forward element (THIRD NCR Main) moves to Safaniya with I MEF (MEF Main) forward headquarters
07 JAN	C+153	NMCB FIVE well drilling detail established in Kibrit NMCB SEVENTY FOUR begins work on Mishab airfield parking apron
08 JAN	C+154	NMCB TWENTY FOUR completes port access road
11 JAN	C+157	NMCB SEVENTY FOUR begins MSR work west from Mishab NMCB FIVE forward element moves to Kibrit to establish NCF support base.
12 JAN	C+158	NMCB FIVE works MSR east from Kibrit to Mishab
16 JAN	C+162	MTT road and ranges complete
17 JAN	D DAY	Operation Desert Storm begins with air campaign EPW compound started by NMCB FIVE Relocated THIRD MAW Headquarters complete at JNAF
18 JAN	D+1	Saudi Government authorizes full access to Tanajib NMCB FORTY detail begins work for MAG 16
20 JAN	D+3	FIRST and SECOND MARDIV galleys at Qarrah and Kibrit begin construction
28 JAN	D+11	NMCB SEVENTY FOUR ASU Bahrain Detail disestablished

FEBRUARY 91

1 FEB	D+16	NCFSU FOUR detail arrives in theater UCT TWENTY Air Detachment arrives in theater ASP 1 complete
07 FEB	D+21	FIRST and SECOND MARDIV galleys at Qarrah and Kibrit complete
08 FEB	D+22	EPW compound completed by NMCB FIVE NMCB ONE Details Advance Party departs
10 FEB	D+24	NMCB FORTY starts well drilling in Khanjar
12 FEB	D+26	NMCB FIVE with NMCB FORTY detail moves to Qarrah NMCB TWENTY FOUR moves forward element to Khanjar
14 FEB	D+28	NMCB SEVENTY FOUR establishes detail in Kibrit THIRD NCR Main moves with I MEF Main command post to Khanjar JNAF Aeromedical evacuation staging facility complete Remotely Piloted Vehicles runway and camp complex started
15 FEB	D+29	NMCB SEVENTY FOUR detail supporting Task Force Troy deploys
20 FEB	D+30	K-Span hangars at JNAF complete Fifth NMCB TOA arrives in Jubayl
21 FEB	D+35	NMCB SEVENTY FOUR Task Force Troy detail returns to Mishab RPV runway and complex complete ASP 2 expansion for retrograde begins

24 FEB	G DAY	Ground offensive begins
5 FEB	G+2	NMCB FIVE well site at Kibrit abandoned Detail from NMCBs FIVE and TWENTY FOUR moves with advance elements of I MEF to Al Jaber Kuwait to prepare a forward command post
27 FEB	G+3	Al Jaber detail recalled to Saudi Arabia
28 FEB	G+4	Cease fire put into effect NMCB SEVENTY FOUR detail assigned to repair coastal MSR through Khafji NMCB ONE Details depart for ROTA, Spain

MARCH 91

01 MAR	G+5	THIRD NCR Main returns to Al Jubayl NMCB FORTY well drilling team and details in Tanajib and Qarrah return to Jubayl
05 MAR	G+9	NMCB FIVE forward element vacates Qarrah leaving a detail behind to maintain the MSR
06 MAR	G+10	NMCB SEVENTY FOUR Khafji detail rejoins main body
07 MAR	G+11	Sixteen man Detail from THIRD NCR, NMCB SEVENTY FOUR and NMCB TWENTY FOUR enter Kuwait with USMC Historical Artifacts Team to recover captured Iraqi Armament and Equipment
08 MAR	G+12	NMCB SEVENTY FOUR begins work to expand ASP 3 for retrograde operations
12 MAR	G+16	NMCB FORTY Advance Party leaves Saudi Arabia
MAR	G+18	NMCB FORTY Main Body departs for Port Hueneme
MAR	G+19	NMCB SEVENTY FOUR detail Shaikh Isa disestablished
20 MAR	G+24	Equipment Recovery Detail returns to Al Jubayl
21 MAR	G+25	MV HAUGE sails with part of NMCB FORTY TOA for CONU
22 MAR	G+26	NMCB FIVE detail Qarrah returns to Al Jubayl CAPT M. R. Johnson relieved by CAPT W. A. Waters as Commander, Third NCR
22 MAR	G+26	UCT TWO Air Detachment departs for Port Hueneme
26 MAR	G+30	NMCB TWENTY FOUR detail at King Abdul Aziz Naval Base disestablished
28 MAR	G+32	MV OREGON sails for CONUS with part of NMCB FORTY TOA

APRIL 91

03 APR	G+38	NMCB TWENTY FOUR detail at Khanjar disestablished ASP 2 expansion complete
08 APR	G+40	MV BOBO sails with final part of NMCB FORTY TOA
10 APR	G+45	NMCB FIVE Advance Party departs Saudi Arabia
12 APR	G+47	NMCB FIVE Main Body arrives in Port Hueneme NMCB SEVENTY FOUR detail at Kibrit disestablished NMCB SEVENTY FOUR begins move to Al Jubayl
17 APR	G+52	NMCB SEVENTY FOUR move to Al Jubayl complete
22 APR	G+57	ASP 3 expansion work complete
25 APR	G+60	NMCB TWENTY FOUR departs for Gulfport
5 APR	G+61	NMCB FIVE TOA leaves theater aboard MV LOPEZ

MAY 91

5 MAY	G+71	NMCB SEVENTY FOUR Advance Party departs Saud Arabia
08 MAY	G+73	NMCB SEVENTY FOUR Main Body departs for Gulfport; 110 man delay party remains to load ships NCF equipment for Operation Provide Comfort airlifted to Turkey
11 MAY	G+76	NCFSU FOUR detachment departs for Gulfport
30 MAY	G+95	NMCB SEVENTY FOUR TOA departs aboard MV AMERICAN CONDOR for Port Hueneme

JUNE 91

03 JUN	G+99	Fifth TOA departs aboard MV CAPE HORN for Okinawa
09 JUN	G+105	NMCB TWENTY FOUR TOA departs aboard MV OSLO POLAR for Gulfport
13 JUN	G+109	NMCB SEVENTY FOUR delay party departs SWA

OPERATIONS SUMMARY

I. PREDEPLOYMENT (C DAY TO C+19)

Immediately after the Iraqi invasion of Kuwait, COMCBPAC began to coordinate with the staff of Commander, U.S. Naval Forces Central Command (NAVCENT) about possible Naval Construction Force (NCF) responses to the situation. They discussed potential deployment sites, construction tasks, and the number and types of NCF units which might be required. COMCBPAC reviewed equipment and unit readiness to identify any deficiencies or shortfalls. COMCBLANT was notified about the possible NCF employment since Atlantic battalions would most likely be needed.

NCF support was formally requested from CINCPACFLT by NAVCENT on C Day (7 August 1990). This request was passed to COMCBPAC who was authorized direct liaison with NAVCENT and U.S. Marine Forces Central Command (MARCENT). The initial request included the following: site preparation for the erection of Fleet Hospital FIVE in Dhaharan, Saudia Arabia; expansion of facilities at Administrative Support Unit (ASU) Bahrain; and support to the FIRST Marine Expeditionary Force (I MEF).

Since there are no operational regiments in the active NCF, command and control over the multiple battalions that would participate in the operation, was accomplished by a composite regimental command element, COMCBPAC FOXTROT DELTA, created from the staffs of COMCBPAC, COMCBLANT and the 31ST NCR. One Civil Engineer Corps Officer was assigned as the liaison to I MEF, whose job was to coordinate NCF taskings with the MEF engineer and to insure that the Marines fully understood NCF missions, capabilities and limitations. The liaison Officer and the FOXTROT DELTA Operations Officer deployed from Camp Pendelton, California with the MEF engineer and arrived in theater on C+10. This two officer unit was tasked to identify specific projects and determine what support would be available from the Marines and the host nations. On C+14 the FOXTROT DELTA Supply Officer, Marine Corps Officer advisor, and Operations Chief arrived in theater to work on logistics support and evaluate the threat and security situation.

Four battalions, NMCB FOUR (Puerto Rico), NMCB FIVE (Port Hueneme), NMCB SEVEN (Okinawa) and NMCB FORTY (Guam) were notified on C Day by secure telephone to begin preparations to embark to SWA. NMCB FORTY, which was in the process of relieving NMCB ONE THIRTY THREE on Guam, was directed to stop the turnover and start its embarkation preparations.

An Operations Order (OPORDER) was prepared which directed the battalions to deploy to Saudi Arabia. It was transmitted on C+1. The battalions were tasked to return all details to the main body with the exception of NMCB SEVEN's and NMCB FORTY's Civic Action Teams (CAT) and NMCB FORTY's detail on Diego Garcia. The independent duty corpsmen assigned to the Civic Action Teams were returned to the parent battalions to improve their medical readiness. (Note: The CAT Corpsman billet was later filled by a qualified Air Force medic volunteer. The Diego Garcia detail was actually supporting Desert Shield build-up from its location since that island was used extensively by the Air Force and Navy to support SWA operations. The OPORDER was continuously updated as new information became available.

The battalions were tasked to deploy as Air Detachments, Air Echelons and Sea Echelons. NAVCENT listed the NCF air deployable units on the Time Phased Force Deployment List (TPFDL) for arrival in theater during the period from C+6 to C+15. The Sea Echelons were scheduled to arrive from C+30 to C+45.

As the operation progressed, the overwhelming requirements for strategic air lift and the priority given to combat units extended the NCF units' scheduled departures. The first major change was to shift the Air Echelons of NMCBs FIVE and FORTY to sea transportation. The 55 sorties required to move each air echelon was just not going to be available and sealift was determined to be quicker. The remaining two Air Echelons and four Air Detachments were left in the TPFDL. As the deployment of all forces continued to lag behind the planned schedule, airlift for cargo continued to be a problem. As a result, the two remaining Air Echelons were also diverted to sea transportation. To compensate for the loss of the air echelons, each air detachment was given additional sorties to allow extra men and equipment to be flown in.

Upon receipt of the embarkation order each battalion immediately began to pack its Table of Allowance (TOA) and get ready to move as scheduled by the initial TPFDL. As the movement dates slipped, the units filled in the time by training. Topics included weapons; tactics; chemical, biological and radiological (CBR) protective measures; desert survival; and contingency construction. As the movement dates continued to slip, the battalions unpacked certain tools and equipment, resumed work on projects and exercised the Advanced Base Functional Component facilities in the TOA, until the arrival of ships and planes was confirmed.

II. DEPLOYMENT (C+19 TO C+72)

On C+19 (26 August 90), ten COMCBPAC FOXTROT DELTA personnel and three pieces of CESE departed for Saudi Arabia aboard a C-141 aircraft from Point Mugu, California. Their departure began the deployment of NCF units to Operation Desert Shield, which would be the largest single deployment since the Vietnam Conflict. They arrived in Saudi Arabia on C+21. Their second flight arrived on C+23 bringing the remainder of the command element into theater.

NMCB FIVE's Air Detachment was the first battalion unit to arrive in Saudi Arabia with 14 personnel on C+21 (28 August 90). By the end of August 1990, NMCB FIVE had gotten 14 C-141 sorties to move 91 people and 23 pieces of equipment. The reinforced Air Det (110 men) completed its movement on C+29 (5 September 90). A total of 24 sorties moved the people and 44 pieces of CESE.

NMCB FOUR's Air Detachment began arriving on C+24 (31 August 90) with four C-141 sorties carrying 42 personnel and 10 pieces of CESE. Mechanical problems delayed the arrival of the final flight until C+37 (13 September). However, the majority of the Air Det had arrived by C+29. The Air Det used 1 C-141 and 6 C-5 sorties to move 137 men and 67 pieces of CESE.

The first elements of NMCB SEVEN's Air Detachment arrived in Bahrain 35 on (11 September 90) on a C-5 which carried 16 people and 6 pieces of CESE. The remainder of their 8 C-5 flights arrived over the next 48 hours bringing a total of 136 people and 46 pieces of CESE.

NMCB FORTY's Air Detachment began to arrive in Saudi Arabia on C+38 (14 September 90) on a C-5 carrying 18 personnel and 7 pieces of CESE. Their Air Detachment used 8 C-5 aircraft to move 189 men and 40 pieces of equipment. The advance party for NMCB FORTY was included in the Air Detachment because its arrival coincided with that of the Sea Echelon which was loaded aboard the MV MARESK CONSTELLATION on C+26 (2 September) in Guam and arrived in Al Jubayl port on C+42 (18 September). The ship was unloaded and the main body arrived on three commercial charter flights on C+48 (24 September) and C+51 (27 September).

The Kuwaiti ship MV DANAH was chartered by the Military Sealift Command to move NMCB SEVEN's Sea Echelon. The ship was loaded in Okinawa on C+34 (10 September) and arrived in Manama, Bahrain on C+51 (2 October). The 150 man advance party which arrived on C+54 (30 September) moved the gear to Shaikh Isa Air Base. The remainder of the battalion arrived by chartered 747 on C+65 (11 October) to close out the movement of NMCB SEVEN.

NMCB FIVE's Sea Echelon departed Port Hueneme on C+30 (6 September) on the MV GREENRIDGE. The battalion's advance party of 159 men arrived in Saudi Arabia on C+50 (26 September) to begin construction of their main camp and prepare for the arrival of the TOA. The GREENRIDGE arrived in Al Jubayl on C+60 (6 October). NMCB FIVE's main body completed their deployment to SWA on C+66 (12 October).

NMCB FOUR's was the last Sea Echelon to arrive. It was transported on the Kuwaiti flag MV KUBBAR which sailed from Roosevelt Roads, Puerto Rico on C+45 (21 September). It arrived on C+69 (15 October) and was unloaded by the 165 man advance party which had flown in on 2 C-141s on C+65 (11 October). NMCB FOUR's main body arrived on C+72 (18 October) to complete movement of approximately 2400 Seabees, 1125 pieces of CESE, and 4 complete TOAs to SWA to support Operation Desert Shield.

III. EXECUTION (C+20 TO C+162/G TO G+3)

The Seabees began work on projects for I MEF immediately upon the arrival of each successive Air Detachment. In most cases equipment and men were simultaneously working on projects while others in the detachment started to set up the NCF living and working spaces. Most units worked two ten hour shifts to meet production goals driven by customer deadlines.

The battalions were situated as follows: NMCB FIVE was at Jubayl Naval Air Facility (JNAF) and was assigned all projects in the vicinity of JNAF. Its camp was named Camp Stethem. NMCB SEVEN deployed to Shaikh Isa Air Base in Bahrain and occupied Camp Tom Orr. NMCB SEVEN also provided the detail at the Admin Support Unit (ASU) Bahrain. NMCB FOUR's Air Detachment deployed to the entire battalion on Aziz, the balance of NMCB FOUR was assigned to Camp 13, later renamed Camp Rohrbach, in the Al Jubayl industrial area. NMCB FOUR kept OPCON of the Air Detachment at Aziz which remained there throughout the

course of Operation Desert Shield/Desert Storm. NMCB FOUR was assigned object work in the port of Al Jubayl. NMCB FORTY was assigned project work in the port of Al Jubayl, the Jubayl industrial area and areas north of JNAF. NMCB FORTY shared Camp 13 with NMCB FOUR.

Camp 13 was a partially completed Saudi Arabian work camp for third country national workers which had been abandoned in the midst of construction as the need for contract workers declined. The facility was idle for approximately six years prior to it being assigned to the NCF. It contained some completed permanent facilities such as two galleys, two recreation centers and administrative offices. Some of the partially completed buildings were usable for offices and admin spaces. It lacked berthing and sanitary facilities. Strongback tents, shower trailers and burn out/porta-heads were used to provide these items. Approximately 6,000 mandays were expended to clean up and expand/adapt facilities to support the two battalions assigned.

The Site selected for Fleet Hospital FIVE was in Al Jubayl port vice Dhaharan. The hospital was erected on an asphalt hardstand eliminating the need for site preparation. Support for the initial operation of the hospital was limited to a fireteam of CEs and a fireteam of UTs to help with the utility modules.

The immediate priority for the Marines was to expand aircraft parking areas at three Host Nation air strips: JNAF and King Abdul Aziz Naval Base in Saudi Arabia and Shaikh Isa Air Base in Bahrain. Each of these strips had adequate runways, but lacked the ramps and taxiways to accommodate the number of airplanes which would be based there. The parking surface would be aluminum AM-2 matting placed over stabilized soil. The preparation of the soil varied at each location. The soil at JNAF was mostly drifted and blow sand. It required placing and compacting one to three feet of structural fill to provide an adequate base. The fill used was marl which was obtained from a borrow pit located adjacent to JNAF. The sand at Aziz was not as deep and soil cement was used to stabilize it. In Bahrain there was six to twelve inches of loose material covering hard pan. The loose material was replaced with select fill purchased from local sources. The AM-2 matting came from the United States by ship. The Seabees' site preparation work needed to be complete prior to its arrival.

The Marines' second priority was to improve the berthing areas for their troops. The berthing tents erected in the sand did not withstand sustained, high winds well. It was decided to construct strongback frames for the tents to insure that they would stand up and to provide tent decks to get personnel and organizational gear out of the sand. Critical facilities such as galleys, computer spaces and communications rooms were built as Southwest Asia (SWA) huts which were a variant on the Southeast Asia hut in the ABFC System.

On C+24 NMCB FIVE's Air Detachment began construction on the JNAF apron expansion and strongback tent camp projects. The apron was divided into three separate areas totalling 1.8 million square feet. The areas had to be leveled to a three percent slope, the maximum permissible for helicopter operations. To for efficiency, the apron followed the existing contours to the maximum extent possible. NMCB FIVE began hauling the marl with support from Marine Wing Support Squadron (MWSS) 172 and the SEVENTH Engineer Support

Battalion (ESB). As it arrived and became available, equipment from NMCB FOUR and FORTY was also employed on this project. The AM-2 matting was received in three shipments and placed as soon as it became available by combined crews of Seabees and MWSS personnel. The matting was placed in checkerboard pattern (similar to a donut hole, only rectangular) as this was considered the most efficient way to use this scarce resource. To control dust, the area between the matting was sprayed with MC-70. Apron 2 was completed on C+110 (25 November), Aprons 1 and 3 on C+160 (14 January). The shortage of AM-2 matting limited progress on this project.

The JNAF tent camp began simultaneously with the apron work. Initial plans called for 240 tent frames. By the time work was completed on C+58 (4 October) 350 had been built. This job was worked by two shifts each of which had two crews, one to cut and pre-fabricate the frames and decks and another to erect them. The Marines were responsible for placing the canvas over the frame. This same system was used by the NCF to build tent camps at all locations in Saudi Arabia. In Bahrain, concrete slabs were placed on the sand to provide the deck. NMCB FOUR built 240 frames at Aziz and 100 frames in the port of Al Jubayl. NMCB SEVEN constructed 350 frames for berthing and 67 for administrative spaces. NMCB SEVEN also poured several hundred concrete slabs for tents which were not framed. NMCBs FOUR and FORTY built 54 strongbacks in Camp 13 for NCF use. All of the tent camp work was constrained by a shortage of lumber which in turn was caused by lack of special funding to support Operation Desert Shield and the cumbersome procedures required to purchase items from local sources.

NMCB FOUR's Air Detachment began the expansion of the King Abdul Aziz Naval Base airfield on C+28 (4 September 90). The first part of this multi-phase job was to do the site work and lay AM-2 matting for a 3,600 foot by 7 foot parallel taxiway which would include 20 "hides" for aircraft parking and two access taxiways. Later work included installation of a 150 foot square Vertical Take Off/Landing pad for AV-8 Harrier jets, a second 42 foot by 620 foot taxiway of AM-2 matting; eight parking hides for OV-10 Marine reconnaissance aircraft; a 96 foot by 316 foot helicopter refueling pad; and an AM-2 mat Harrier Jet Engine power test stand. All matting at Aziz was laid on soil cement stabilized sand. The Det also did site preparation for a second full length taxiway that would be paved by a local contractor. This work also included twenty additional hides for AV-8's.

NMCB SEVEN's priority project was construction of an access road and Ammunition Supply Point (ASP) to store aviation ordnance. The work consisted of building berms to create storage cells and act as blast deflection and security barriers. An open bomb storage area with adjacent container stacking areas were leveled. Work started on C+39 and completed on C+118. The customer the occupied storage modules as soon as each was complete. A total of 73,590 cubic yards of fill was used to build this project. As the ASP work progressed, resources became available for horizontal work at the airfield. An access road from the fire station directly to the flight line was constructed to reduce the response time for the crash crew. To provide more aircraft parking, a 600,000 square foot area was leveled and compacted to receive AM-2 matting. These projects began on C+71 and continued through the turnover with NMCB 74.

In Saudi Arabia, the next priority for the Seabees would be construction of ASPs. The large amount of ordnance quickly exceeded the capacity of any available site to safely store it. NMCB FIVE, with assistance from SEVENTH ESB, began construction on ASP 2 on C+29. Ultimately, equipment and men from NMCBs FOUR and FORTY were also assigned to help complete this project. The work included building twelve rows of 45 modules. Each module contained six 32 foot by 70 foot cells that were bermed on three sides and open to the front. Access roads to each module and a ten foot high perimeter security/blast berm were also built. The modules were put in use as they became ready and the project was officially completed on C+98. NMCB FORTY was assigned to build ASP 1 in Al Haydaruk. This ASP was carved out of an abandoned quarry site. Some preliminary work was done by the Seventh ESB. The perimeter and storage module berms were created from 350,000 cubic yards of fill. ASP 1 work began on C+54 and was completed on C+178. The facility was put in use as modules were completed. The lengthy construction time reflects several additions to the scope including guard towers and a helicopter pad. NMCB FOUR built an aviation ASP at Ras Al Ghar. It consisted of pushing up twenty-five 48 foot by 60 foot berms from the sand to create storage modules.

Until the decision to reinforce Operation Desert Shield forces on C+94, the battalions worked on a variety of horizontal and vertical projects to improve the operational capabilities and living conditions for the Marines. They also worked to establish and improve their individual camps. COMCBPAC FOXTROT DELTA policy dictated that a minimum of 75 percent of a battalion's direct labor would be assigned to customer work. The remainder could be used for camp/NCF projects. Typical work included the following:

a. NMCB FOUR: Two 2,000 man galleys in Al Jubayl port for FIRST FSSG; a 1,000 foot by 100 foot access road to the port to shorten the convoy route by almost eight miles; construction of wooden tent platforms for 24 of Fleet Hospital FIVE's temper tents; installation of a drainage system for the Fleet Hospital FIVE galley scullery; concrete anti-tank barriers for the FIRST Marine Division; clamshelters (tension fabric structures resembling a huge circus tent) and pads for aircraft hangars at Aziz; and improvements to Camp 13.

b. NMCB FIVE: Construction of a galley for Marine Air Group (MAG) Sixteen; construction of a clamshell hangar deck; repairs to two swimming pools and conversion of the pool complex to an all hands recreation center; and construction of Camp Stethem facilities including a new SWA hut galley.

c. NMCB SEVEN: Erection of tent frames and concrete pads for various THIRD Marine Air Wing (MAW) functions including HAWK missile batteries; aid stations, squadron admin and storage spaces, communications facilities; headquarters facility; paving an apron island to reduce FOD hazards; construction of a beach area using spoil from the apron job; construction of a SWA hut complex for use as the THIRD MAW Headquarters's and construction of living and maintenance facilities in Camp Orr.

NMCB SEVEN also established a detail at ASU Bahrain. These 25 men built small arms ammunition magazine, office spaces and a supply storage building and vehicle barriers. They also revamped the lighting in the public works spaces and replaced the sewer lines and plumbing fixtures in the heads at the All Hands club. They undertook site preparations and utility work for the

army's 47th Field Hospital adjacent to the ASU. The detail lived at the ASU and received project materials from the ASU public works department.

d. NMCB FORTY: Designed and constructed the FIRST Marine Division field galley in Abu Haydriyah which was capable of preparing 22,000 meals per day; strongback tents and water and power connections for Fleet Hospital FIVE; and the conversion of an inactive police ~~station~~ compound for use as I MEF Headquarters.

On C+94 the National Command Authority ordered additional forces into theater. The nature of Operation Desert Shield changed from focusing on the defense of Saudi Arabia to preparing for an offensive that would liberate Kuwait. The SECOND Marine Expeditionary Force (II MEF) would provide additional men, equipment and aircraft. Many of the same facilities as those built for I MEF were going to be needed in about half the time. In addition to the bed down facilities in the vicinity of Al Jubayl and in Bahrain, operations would shift north requiring new facilities to be built near the Saudi-Kuwaiti border. THIRD NCF determined that the anticipated work load to support the build-up could be accomplished with the forces in theater. However, as a precaution a fifth TOA and selected pieces of augment Civil Engineer Support Equipment were sent from CONUS to Al Jubayl. The equipment and tools could be used to replace combat casualties, and if the need for an additional battalion arose, the TOA would be prepositioned in theater so that only the people would have to be moved. Most of the TOA was moved from Gulfport with certain augment items shipped from Port Hueneme. This TOA arrived in theater on D+30 (20 February).

Priority was to provide living spaces for the II MEF troops who began arriving in December. The NCF was tasked to provide a facility to include berthing, working spaces, galleys, showers and equipment staging areas for 15,000 men. To allow for staggered completion to meet troop arrival dates, the project was designed by NMCB FIVE as six 2,500 man modules. Personnel from all battalions in theater were assigned to the job which was nicknamed "Wally World" after the fictional amusement park in the movie "National Lampoon's Vacation". The scope included 1,740 concrete slabs for tents; twenty-four double SWA huts for galleys; twenty-four 25 person shower facilities; and 108 strongback tents for working spaces. The electrical, water, sewer and "grey water" systems were also constructed to support this complex. The expeditionary utility systems designed to support quick expedient occupancy were eventually connected to the local water, power and sewer systems. The project was sited on 300 acres and required thirteen miles of roads for access and internal circulation and a six acre equipment storage area. Work began on C+110 and most of the work completed except for final utility connections on C+126. The project was fully complete on C+150.

The NCF supported the move of the THIRD MAF headquarters from Shaikh Isa to JNAF. NMCB FIVE built a tent camp complex to berth 1,600 people and provided administrative and operations/communication spaces. Connections to host nation electrical, water and sewerage systems were also included in this project.

Other work in the vicinity of Al Jubayl included sling-out pads at ASPs 1 and 2 to allow helicopter movement of ammunition; a new water point; site preparation and utility work for Fleet Hospital FIFTEEN; site preparation for

an Air Force Aeromedical Evacuation Staging Facility at JNAF; and construction of access and circulation roads for an Army petroleum terminal.

C+116 Seabees from NMCB FIVE began construction of the first of many "K-Span" Automatic Building Machine structures which would be erected in theater. The system produces a building that looks like a Quonset hut by forming ribs from rolled steel by use of a special machine. The ribs are seamed together and erected to form the structure. The width and height can be adjusted to various combinations. An Air Force Red Horse team taught the techniques to the Seabees who used these for various projects throughout the theater.

On C+119 (4 December) NMCB SEVEN's advance party ended its seven month deployment and left Shaikh Isa for homeport. It was replaced by NMCB SEVENTY FOUR whose main body arrived on C+124. NMCB FOUR's advance party left on C+126 for homeport and was replaced by NMCB TWENTY FOUR's advance party. NMCB TWENTY FOUR was an activated reserve NMCB sent in theater to directly support Operation Desert Shield. Concurrent with the turnover of battalions, 24 men from the THIRD NCR relieved selected personnel from COMCBPAC FOXTROT DELTA and added to the staff size to form the THIRD NCR. COMCBPAC FOXTROT DELTA officially became the THIRD NCR on C+126 and continued to exercise operational control over all NCF units in SWA.

At the same time that NMCBs FOUR and SEVEN were being replaced, it was recognized that the additional tasking for the ensuing 60 day period could be more effectively accomplished if augment crews were available. Since the fifth TOA had not arrived in theater yet and most of the work would be horizontal, it was decided that a fifth full battalion could not be fully utilized. NMCB ONE, deployed to Rota, Spain, provided two 100 man details to augment NMCBs FIVE and FORTY. These men, primarily EOs and CMS, arrived on C+126 and remained until the end of the ground campaign. They were integrated into the respective battalion organizations and worked on almost every tasked project.

December saw the focus of effort for both the Marines and the NCF shift north towards the Saudi-Kuwaiti border. All of the northern sites differed considerably from Al Jubayl and Bahrain because there would be little existing infrastructure upon which the Marines and Seabees could rely to support operations. Almost all facilities would be carved from the barren desert.

The first task was to establish a logistics base at Ras Al Mishab which was approximately 35 miles south along the coast from the Saudi-Kuwait border. In support of this effort, NMCB SEVENTY FOUR redeployed to Mishab from Shaikh Isa. A survey party went to the site on C+129 to lay out the camp and look at project work. The advance party arrived on C+130 via a C-130 aircraft. The balance of the battalion moved during the next 7 days by a combination of Marine C-130s and truck convoys. The battalion left a 64 man detail in Shaikh Isa and a 35 man detail at ASU Bahrain to complete key projects turned over by NMCB SEVEN.

Project work at Mishab was to support the establishment of General Support Group (GSG) TWO from the FIRST FSSG and the bed down of Marine Air Group (MAG) TWO SIX at the airfield. In addition to building their own tent camp, NMCB SEVENTY FOUR's first task was to build ASP 3, a 1,400 foot by 1,900 foot tactical storage facility consisting of 56 bermed 150 foot by 200 foot storage cells. This project began on C+142 and was completed in 2

days. At Mishab airfield, work began on C+133 to build a 5,000 man camp for MAG TWO SIX. The normal work of building berthing and personnel support facilities was complicated by the need to revet all tents and facilities as protection against hostile indirect fire. This was done by berming up the soil rather than digging-in the structures because the underground water table was too high because of the proximity of the Arabian Gulf. NMCB SEVENTY FOUR also completed numerous smaller jobs mostly consisting of placing concrete slabs for tents and building strongback frames or huts for the various air group functions that would move into the area.

The Saudi Arabian government awarded a contract to a local contractor to expand the Mishab airfield for use by MAG TWO SIX. As the 15 January deadline set by the United Nations for Iraq to leave Kuwait neared, most contractors became extremely reluctant and in many cases refused to perform work and/or deliver goods north of Abu Haydriyah. The contractor hired to expand the airfield did not immediately mobilize and the delay would preclude MAG TWO SIX from standing up at its forward location to support future operations. NMCB SEVENTY FOUR was tasked to stabilize a 1.5 million square foot area for aircraft parking and refueling. Augmented by members of NMCB TWENTY FOUR, they used soil cement to stabilize the area in 23 days. By the time the work was completed, the operations plans changed and the shift to the west moved MAG TWO SIX from Mishab airfield to Al Khajar.

NMCB FORTY supported the FIRST Marine Division when it established its Division Support Area at Manifah Bay. The battalion built a 5,000 man galley complete with all utilities, 20 expeditionary showers as well as the perimeter security berm and the internal road network. NMCB FORTY also constructed the Thunderbolt firing and training range complex in the vicinity of ASP 1 in Al Haydaruk. This required building a five kilometer road to the site across deep drifted sand. A key requirement was to bridge an oil pipeline to allow tanks and other armored vehicles access to the ranges. Seven separate firing ranges with berms for security and safety boundaries, observation towers and pop-up targets and markers were constructed in less than three weeks to meet the deadline (C+161) imposed by a Mobile Training Team working with the two Marine Divisions.

On C+153 (6 January), I MEF sent a forward command element to Ras Safaniya. Accompanied by 10 men from the THIRD NCR. The NCR's forward element would coordinate project work in northern Saudi Arabia while the balance of the Regiment remained in Al Jubayl to coordinate logistics support for forward NCF units and work in the Jubayl area. This split mode of operation would be replicated by all the Jubayl battalions to support the Marines forward while leaving most of their logistics support in the rear. Support required almost daily convoys to move equipment, supplies, and paperwork from the south.

ON C+153 NMCB FIVE sent a well drilling crew and security detail to the Combat Service Support Detachment (CSSD) in Kibrit, approximately 35 miles west of Mishab. Four days later, a second crew was sent to Kibrit to start work on a 40,000 man enemy prisoner of war (EPW) holding facility and to build an NCF support camp capable of supporting 500 Seabees. Ultimately 350 men from NMCBs FIVE and FORTY would occupy this camp. The work in Kibrit and other areas west of Mishab was for the Direct Support Command (DSC) which was providing logistics support for the two Marine divisions. While building their camp, crews from NMCBs FIVE and FORTY began a 15,000 man galley for the

FIRST Marine Division in Kibrit and another for the SECOND Division in Qarrah. The galleys were built using a combination of K-Spans, SWA huts and strongback tents. Because of material shortages, many of the structures were built from cannibalized pieces from the II MEF bed down site back in Jubayl or the Abu Haydriah galley site.

The battalions' main effort was to improve construction and maintain the Main Supply Route (MSR) between Mishab and Kibrit. Heavy around-the-clock traffic combined with unseasonably high rainfall to tear up the existing marl and sand road. The MSR work was divided between NMCB FIVE/NMCB FORTY DET and NMCB SEVENTY FOUR. NMCB SEVENTY FOUR along with men and equipment from NMCB TWENTY FOUR was responsible for the first 30 kilometers and the NMCB FIVE/FORTY team would work the remainder of the road to Kibrit. The crews worked around the clock, protected by a security element, to keep up with the maintenance/construction.

As Operation Desert Shield ended on C+162 (16 January) the NCF had under construction or completed all projects required to support I MEF defensive and offensive operations. One immediate result of the start of the air campaign was authority for Marine air units to use the ARAMCO airfield at Tanajib. Once access was granted, MAG SIXTEEN moved in and requested Seabee support to expand the field's operational capabilities. NMCB FORTY established a detail in Tanajib on D+1. The immediate need was for more aircraft parking. Almost 200,000 cubic yards of material was moved to create a 1,750,000 square foot AM-2 matting helicopter parking area. Soil conditions allowed placement of the matting over compacted sand without the use of soil cement or select fill. However, 1,600 foot refueling taxiway did require soil cement prior to placing the matting. The detail also built eight concrete pads for clamshell hangars, a 60,000 square foot paved roadstand for ground support equipment and a nine module ASP. The work at Tanajib continued during the air and ground campaigns, with most of the operational facilities completed in time to support the ground offensive.

NCF units located in Mishab and Safaniya received incoming Iraqi artillery, rocket and missile fire during the first week of the air campaign. Seabees also supported Marine efforts during the Battle of Khafji by preparing road demolition charges and salvaging equipment after the battle.

In early February and 8-10 days prior the commencement of the ground war, I MEF altered the ground offensive plans. The operation would breach the border between Saudi Arabia and Kuwait running north to south instead of that running east to west as originally planned. This change in plans would shift the centroid of operations 50 miles to the west and 35 miles further north from Kibrit. The NCF would have to shift its operations and build new facilities to support the Marine mission. While the air campaign continued all work was completed prior to the start of the ground offensive.

To manage the fifth TOA being held in reserve, a 56 man detachment from NCFSU FOUR arrived on D+16. They were accompanied by a Air Detachment from UCT TWO who deployed to support the mission to repair facilities in any Kuwaiti port seized during the ground assault. As envisioned in the plan the port would play a key role in logistics support to sustain the offensive.

When the Marines shifted west, they relegated Kibrit to a minor support role. The primary support for the ground offensive would build up at Qarrah and Al Khanjarh where the DSC established its headquarters. NMCB FIVE along with the personnel from NMCB FORTY moved to Qarrah on D+26. At the same

time, NMCB TWENTY FOUR was tasked to move a command element and 300 Seabees to Khanjar to establish a second NCF support camp. NMCB SEVENTY FOUR's ASU ashrafin detail was disestablished on D+11 to move more Seabees forward.

The move west almost doubled the number of miles of MSR maintenance. The routes went inland from Mishab and north from the TAP Line road to the Kuwaiti border. The aggregate total of MSR's was approximately 250 miles. To maintain the longer distances, the responsibilities were redivided among NMCBs FIVE, TWENTY FOUR and SEVENTY FOUR. NMCB SEVENTY FOUR was tasked to maintain the road from Mishab to Qarrah, a distance of approximately 65 miles. To do this efficiently, on G+28 they established a detail in Kibrit in NMCB FIVE's former camp. NMCB FIVE was given responsibility for the east-west MSR from Qarrah to its western terminus along with the north-south road from the TAP line road to the east-west route. NMCB FIVE also maintained a second north-south MSR from Qarrah to the assembly areas adjacent to the Kuwaiti border. NMCB FIVE's road maintenance crew continued to be comprised of personnel and equipment from NMCBs FIVE and FORTY. NMCB TWENTY FOUR maintained the MSR to the logistic bases at Khanjar from the east-west MSR along with two routes from Khanjar to the Kuwaiti border. This effort required around-the-clock operations and the use of almost all available equipment. Based on the diminished threat to air strips from Iraqi aircraft and missiles, I MEF relieved the NCF of its Rapid Runway Repair mission at Shaikh Isa and JNAF to allow the graders and rollers to move forward and work the MSRs.

Other projects in the new area included construction of the forward command post for I MEF at Al Khanjar by a combined crew from NMCBs FIVE and SEVENTY FOUR. NMCB FIVE built a 1500 foot AM-2 matting landing strip and base camp for three Remotely Piloted Vehicle (RPV) Companies which moved to Qarrah to provide better aerial drone reconnaissance coverage over Kuwait. NMCB TWENTY FOUR worked with MAG TWO SIX personnel to place 900,000 square feet of AM-2 matting in Khanjar to provide aircraft parking for 110 helicopters. They also pushed up a 4,000 meter perimeter berm around the entire landing zone and support camp which was named "Lonesome Dove". NMCB TWENTY FOUR was also tasked to build two C-130 capable landing strips adjacent to Khanjar. The strips which were vital to the logistics build up to support the ground offensive and would be used for aeromedical evacuation were carved out of the gravel plains which were prevalent in the area. The first 6,600 foot by 150 foot strip was completed in less than 48 hours. The battalion also had to maintain the strips which entailed grading and rolling them after every fifteen to twenty landings. NMCB SEVENTY FOUR assumed the maintenance responsibility for the C-130 strip at Kibrit and made emergency repairs to the galley at the EPW holding compound after it was damaged by high winds. NMCB FIVE was responsible for maintaining the C-130 strip at Qarrah.

NMCB FIVE's well drilling team did not find water at Kibrit. The hole collapsed at a depth of 1000 feet. The battalion replaced the pumps in an existing 1200 foot well in Kibrit and a 800 foot well in Qarrah to increase their output. NMCB FORTY was tasked to drill a well at the Khanjar logistics base. A site was chosen and operations began in early February. The crew reached a depth of 1,050 foot without striking water. Operations ceased when the ground campaign ended.

NMCB SEVENTY FOUR was assigned one of the NCF's most unique missions, support to Task Force TROY. This unit was responsible for deceiving the Iraqis about the location and strength of the I MEF forces with the intent of masking the time and place of the ground assault. The battalion prefabricated mock tank turrets and artillery decoys from wood and other materials. On D+29 a 21 man detail joined the Task Force in "Operation Flail" to deliver and erect the decoys during a six day period within known Iraqi patrolling areas along the Saudi-Kuwaiti border. These decoys were a key to the operation which drew considerable Iraqi interest and artillery and mortar fire. The operation is credited with tying down at least two brigades of armor/mechanized infantry.

The NCF was heavily involved in the planning for the occupation of Kuwait by I MEF forces. The MEF headquarters which would be established at Al Jaber airfield would be built by the NCF. Other work identified included runway repairs at three Kuwaiti air bases and restoration of utility services to designated critical facilities. The NCF plan was to establish an NCF support camp in the vicinity of Al Jaber. This camp would be occupied by NMCB FIVE and the THIRD NCF forward element. NMCB TWENTY FOUR was tasked to follow on and establish a second support camp in the vicinity of the Kuwait International Airport if and when the need arose.

The Seabees sent a 75 man detail from NMCBS FIVE and TWENTY FOUR to build the MEF command post on Al Jaber. They accompanied the advance party from the MEF command post on G+2 and began work on G+3. Their efforts were soon delayed by the very real need to sweep the area of unexploded ordnance.

The rapid conclusion of the ground war led the MEF to decide that it did not need a command post in Kuwait and that it could conduct all required operations from Al Jubayl. The detail was recalled from Kuwait on G+3.

IV. RETROGRADE (G+3 TO G+109)

The speedy end of hostilities had two immediate effects on NCF operations in SWA. First, the Seabees were no longer required north into Kuwait so the forward elements could rejoin parent units in Al Jubayl and Mishab. Second and most importantly, the Marines were planning to withdraw as quickly as possible which cancelled most future NCF projects. Only those projects needed to support retrograde would be built. It was estimated that the work remaining would allow one battalion per month to leave theater starting in March. Lift was requested to support this schedule.

NMCB FORTY was scheduled to be relieved by NMCB THREE in mid-March. Since the workload was decreasing, it was decided to deploy NMCB THREE to Guam and that NMCB FORTY would return home as scheduled. On G+5 all of the battalion's forward personnel returned to Al Jubayl to prepare to return to the United States. The battalion worked feverishly to get the TOA staged and ready for embarkation. The TOA and responsibility for Camp 13 passed to NMCB TWENTY FOUR on G+13. The battalion's advance party departed on G+16. The Main Body followed two days later arriving back in Port Hueneme on G+17 (15 March).

Since there was no appreciable damage to the Kuwaiti ports. UCT TWO was leased and left for Port Hueneme on G+22.

The 200 men from NMCB ONE returned to their parent battalion in Rota on two flights. The flights were on D+22 and G+4 enabling the men to return to Jemport with their battalion on the scheduled rotation.

The remaining battalions would have certain projects to accomplish to support the retrograde of both Marines and Seabees. While work was focused in the areas around Mishab and Al Jubayl, the Seabees remained at Khanjar, Kibrit and Qarrah to maintain the MSR and C-130 strips. Qarrah was vacated on G+22. The details at Khanjar and Kibrit were disestablished on G+38. Since there was no retrograde work in Shaikh Isa, NMCB SEVENTY FOUR's detail rejoined the battalion in Mishab on G+19.

On G+11 a sixteen man detail comprised of personnel from the THIRD NCR, NMCB TWENTY FOUR and NMCB SEVENTY FOUR was sent to an area southwest of Kuwait City. They helped a Marine Historical Artifacts Team recover captured Iraqi armament, small arms and equipment for examination and evaluation. The work consisted of providing rigging and transportation support. The detail returned to Al Jubayl on G+24.

ASP 2 required covered work areas to prepare the ammunition for shipment. NMCB FIVE constructed 30 concrete slabs for ammunition storage, 41 steel "pole barn" shelters atop concrete slabs; erected a 9,600 square foot K-Span structure; and built two 7,200 square foot "Sprung" tension fabric structures. Work had begun before the start of the ground offensive and was completed by built NMCB TWENTY FOUR on G+48. NMCB FIVE also erected two additional Sprung buildings at JNAF to allow Marines leaving the theater to processed in a covered area.

While NMCB FIVE worked on these two projects, they were moving from JNAF into Camp 13 and preparing their TOA for shipment out of theater. Continuing evaluation of the NCF work remaining showed that it would not sustain three battalions for as long as originally planned. NMCB FIVE was ordered home three weeks early. Their advance party departed on G+45. The Main Body arrived in Port Hueneme on G+48.

NMCB TWENTY FOUR's detail at Aziz disestablished their camp and returned to Camp 13 on G+30. The battalion made repairs to the II MEF bed down site to put it back in service for personnel returning from up north. This project began prior to the start of the ground war and was completed on G+38. NMCB TWENTY FOUR also erected five sprung buildings in Jubayl port to provide shelter for the packing crating of the Marine' gear.

The retrograde operation continued to highlight the Seabees' diverse capabilities as complete shipboard embarkation was handled by Seabee units. The first two ships in theater were loaded primarily with Seabee equipment as Seabees were the first prepared to embark as complete units. Seabees also provided tie-down crews, ramp controllers, drivers, weighing and marking crews, blocking and shoring crews, and supervised the loading of two ships.

NMCB TWENTY FOUR supported the preparation and loading of the TOAs for NMCBs FIVE and FORTY. NMCB FORTY's TOA was loaded aboard the MV HAUGE, MV OBREGON and MV BOBO which left on G+25, G+32 and G+43 respectively. NMCB FIVE's TOA was loaded aboard the MV LOPEZ which left on G+61. NMCB TWENTY FOUR returned to the United States on G+60.

NMCB SEVENTY FOUR sent a 25 man detail to the Saudi/Kuwait border town Al Khafji to remove obstacles and fill craters on the main coastal highway into Kuwait. The obstacles included oil pipes, anti-tank barricades/ditches and bomb craters which were hampering efforts to resupply Coalition Forces along the coastal road. This detail worked in Khafji and approximately 15 kilometers into Kuwait from G+4 to G+10.

NMCB SEVENTY FOUR worked on many projects to support the retrograde of ammunition through the port of Mishab. ASP 3 was expanded by adding one hundred twenty, 100 foot by 150 foot ammunition storage cells. The battalion built two 60 foot by 160 foot K-Span buildings to allow ammunition to be cleaned and packed. Other work in ASP 3 included erection of four guard towers, construction of four sheds, placement of concrete work pads and treatment of 25,000 feet of road with MC-250 for dust control. Work began on G+12 and was completed on G+57.

NMCB SEVENTY FOUR left Mishab and moved to Camp 13 in Al Jubayl during the period from G+47 to G+52. A small detail remained to complete electrical work in ASP 3. The battalion's sole mission in Jubayl was to prepare their TOA and the fifth TOA for shipment. Once this was done, NMCB SEVENTY FOUR's main body left on G+73 and arrived in Gulfport on G+74. NCFSU FOUR's detachment left on G+76. However, since ships were not available to move the remaining TOAs, a 110 man delay party remained in Saudi Arabia to maintain custody of the TOAs and load them on the ships. NMCB SEVENTY FOUR's TOA was loaded on the MV AMERICAN CONDOR which sailed for Port Hueneme on G+95. The fifth TOA sailed aboard the MV CAPE HORN for Okinawa on G+99. NMCB TWENTY FOUR's TOA was loaded aboard the MV OSLO POLAR which sailed to Gulfport on 105. NMCB SEVENTY FOUR's delay party closed up Camp 13 and returned it to the Saudi government and left for homeport on G+110.

In addition to retrograding equipment to CONUS, the Seabees in Saudi Arabia prepared and shipped equipment and gear for Operation Provide Comfort, the Kurdish relief efforts, in Northern Iraq. A water well rig, air compressor, shower trailers, two tractor-trailers and pallets of tents, and refrigerators departed from Jubayl on G+73 aboard two C5B and one C-141 Aircraft.

The departure of NMCB SEVENTY FOUR's personnel closed out the NCF's participation in Operations Desert Shield and Desert Storm. The NCF completed the following work: 6.0 million square feet of aircraft parking; 4 ASPs totalling over 9.9 million square yards to contain over \$2.0 billion of ordnance; tent camps for 37,500 people; 4,865 structures including strongback tents, SWA huts, K-Span and Sprung buildings; galleys to feed 100,000 troops; maintained 250 miles of unimproved Main Supply routes; and built two C-130 airstrips. The work consumed 8.0 million board feet of lumber, 100,000 sheets of plywood, 52,000 cubic yards of concrete, 300,000 cubic yards of select fill and 1.4 million feet (262 miles) of electrical wire. The Seabees in SWA wrote a new chapter in Seabee history as they proved to be a "Can Do" outfit that was fully able to support Marine Corps combat operations.

Seabee Projects

- 10 Camps: Total capacity of 42,500 people
- 1 Enemy prisoner of war compound: 40,000 man capacity
- 3 Galleys: Total feeding capacity of 75,000
- 10 Aircraft parking aprons: 7 million square feet of site preparation/AM-2 matting
- 4 Runways (Unpaved)
- 12 Hangars
- 4 Ammunition supply points: 10 million square feet total area
- 4 Medical facilities
- Road maintenance: 200 miles of unpaved four-lane main supply routes/access roads
- Buildings: 4,945 total and 3,200 tent slabs
 - 4,100 Strongback tents
 - 760 Southwest Asia huts
 - 85 Guard towers
- Miscellaneous work
 - Defensive barriers
 - 2,000 Steel hedgehogs/tetrahedrons
 - 500 Concrete tank barriers
 - Drilled 2 water wells
 - Built 4 Marine Expeditionary Force command posts (rear and forward)
- Materials used
 - 7.7 million feet of lumber
 - 93,000 sheets of plywood
 - 110,000 feet PVC pipe
 - 1.4 million feet (262 miles) electrical wire
 - 53,000 cubic yards concrete
 - 255,000 cubic yards select fill
 - Estimated material expenditure of \$18 million

(Statistics for the period Aug. 17, 1990, to March 31, 1991.)

Chronology

COMCBPAC Forward Deployed Jubail	Aug. 17, 90 - Dec. 14, 1990	31 men
Third NCR (Formerly CBPAC Foxtrot Delta)		36 men
Jubail	Dec. 15, 1990 - 1 April 91	12 men
Saffinayah	Jan. 6, 1991 - Feb. 7, 1991	12 men
Al Khanjar	Feb. 7, 1991 - March 1, 1991	75 men
Al Jaber, Kuwait	Feb. 26, 1991 - March 1, 1991	
(Composed of Third NCR, NMCB Five and NMCB 24 personnel)		
NMCB Four		125 men
King Aziz	Aug. 13, 1990 - Dec. 17, 1990	500 men
Camp 13 (Camp Rohrbach)	Sept. 13, 1990 - Dec. 17, 1990	
NMCB Five		602 men
JNAF	Aug. 29, 1990 - April 1, 1991	250 men
Kibrit	Jan. 6, 1991 - Jan. 30, 1991	250 men
Al Qaraah	Jan. 30, 1991 - April 1, 1991	
NMCB Seven		632 men
Shaikh Isa	Sept. 11, 1990 - Dec. 9, 1990	25 men
ASU Bahrain	Sept. 11, 1990 - Dec. 9, 1990	
NMCB 24 (Relieved NMCB Four)		588 men
Camp 13	Dec. 12, 1990 - April 1, 1991	120 men
Tanajib	Jan. 22, 1991 - Feb. 27, 1991	50 men
Al Qaraah	Feb. 7, 1991 - March 4, 1991	
NMCB 40		524 men
Camp 13	Sept. 14, 1990 - March 16, 1991	120 men
Tanajib	Jan. 22, 1991 - Feb. 27, 1991	50 men
Al Qaraah	Feb. 7, 1991 - March 4, 1991	
NMCB 74 (Relieved NMCB Seven)		65 men
Shaikh Isa	Dec. 4, 1990 - April 1, 1991	(Initially 587 men)
Mishab	Dec. 14, 1990 - April 1, 1991	522 men
Kibrit	Jan. 30, 1991 - March 4, 1991	150 men
NMCB One Details 15 and 16		200 men
Jubail	Dec. 8, 1990 - March 5, 1991	
(Approximately 25 men joined NMCB Five at Kibrit)		
NCFSU Four Det Alpha		56 men
Jubail	Feb. 5, 1991 - April 1, 1991	
UCT Two, Air Det Bravo		15 men
Jubail	Feb. 5, 1991 - April 1, 1991	